

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended) A method for fabricating a semiconductor device comprising:

a resin sealing step of loading a substrate on which semiconductor elements having protruding electrodes are formed to a mold, and supplying a sealing resin to positions of the protruding electrodes so as to form a resin layer which seals the protruding electrodes and the substrate;

a protruding electrode exposing step of exposing at least ends of the protruding electrodes from the resin layer; and

a separating step of cutting the substrate together with the resin layer so that the semiconductor elements are separated from each other,

wherein the resin sealing step disposes a film between the protruding electrodes and the mold, which thus contacts the sealing resin through the film,

the film used in the resin sealing step is formed of an elastically deformable substance, and the ends of the protruding electrodes are caused to fall in the film when the resin layer is formed by using the mold; and

the film is detached from the resin layer in the protruding electrode exposing step so that the ends of the protruding electrodes can be exposed from the resin layer.

Claims 2 and 3 (Canceled)

Claim 4 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein:

the mold used in the resin sealing step comprises an upper mold which can be elevated, and a lower mold having a first lower mold half body which is kept stationary and a second lower mold half body which can be elevated with respect to the first lower mold half body; and

the resin sealing step comprises:

a substrate loading step of placing the substrate on which the semiconductor elements having the protruding electrodes are arranged in a cavity defined by a cooperation of the first and second lower mold half bodies and providing the sealing resin in the cavity;

a resin layer forming step of moving down the upper mold and the second lower mold half body so that the sealing resin is heated, melted and compressed so that the resin layer sealing the protruding electrodes is formed; and

a detaching step of moving up the first mold so as to detach the upper mold from the resin layer, and then moving down the second lower mold half body from the first lower mold half body so that the substrate to which the resin layer is provided is detached from the mold.

U.S. Patent Application Serial No. **09/635,124**

Claim 5 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein:

an excess resin removing mechanism is provided in the mold used in the resin sealing step; and

the excess resin removing mechanism removes excess resin and controls a pressure applied to the sealing resin in the mold.

Claim 6 (Canceled)

Claim 7 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein the sealing resin is provided to the film before the resin sealing step is executed.

Claim 8 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 7, wherein a plurality of sealing resins are provided to the film, and the resin sealing step is continuously carried out by moving of the film.

Claim 9 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein a reinforcement plate is loaded onto the mold before the substrate is loaded onto the mold in the resin sealing step.

U.S. Patent Application Serial No. **09/635,124**

Claim 10 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 9, wherein the reinforcement plate comprises a substance having a heat radiating performance.

Claims 11-20 (Canceled)

Claim 21 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 9, further comprising a reinforcement plate to which the sealing resin is provided beforehand in the resin sealing step.

Claim 22 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 21, wherein:

a frame extending towards the substrate in a state in which the reinforcement plate is loaded onto the mold is formed to define a recess portion; and

the resin layer is formed on the substrate by using, as a cavity for resin sealing, the recess portion in the resin sealing step.

Claim 23 (Canceled)

U.S. Patent Application Serial No. **09/635,124**

Claim 24 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein:

the film used in the resin sealing step has projections located in positions corresponding to those of the protruding electrodes; and

the resin layer is formed in a state in which the projections are pressed against the protruding electrodes.

Claim 25 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein:

an external connection protruding electrode forming step is executed which forms external connection protruding electrodes on the ends of the protruding electrodes after the ends of the protruding electrodes are exposed from the resin layer in the protruding electrode exposing step.

Claim 26 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 25, wherein the protruding electrodes and the external connection protruding electrodes are bonded by using a bonding member having a characteristic of stress relaxation in the external connection protruding electrode forming step.

Claim 27 (Currently Amended) ~~The method for fabricating the semiconductor device as claimed in claim 1~~ A method for fabricating a semiconductor device comprising:

a resin sealing step of loading a substrate on which semiconductor elements having protruding electrodes are formed to a mold, and supplying a sealing resin to positions of the protruding electrodes so as to form a resin layer which seals the protruding electrodes and the substrate;

a protruding electrode exposing step of exposing at least ends of the protruding electrodes from the resin layer; and

a separating step of cutting the substrate together with the resin layer so that the semiconductor elements are separated from each other,

wherein the resin sealing step disposes a film between the protruding electrodes and the mold, which thus contacts the sealing resin through the film, wherein:

cutting position grooves are formed, before the resin sealing step is carried out, in the substrate so as to be located in positions in which the substrate is cut in the separating step; and
the substrate is cut in the cutting position grooves after being filled with the sealing resin.

Claim 28 (Currently Amended) ~~The method for fabricating the semiconductor device as claimed in claim 1~~ A method for fabricating a semiconductor device comprising:

a resin sealing step of loading a substrate on which semiconductor elements having protruding electrodes are formed to a mold, and supplying a sealing resin to positions of the protruding electrodes so as to form a resin layer which seals the protruding electrodes and the substrate;

a protruding electrode exposing step of exposing at least ends of the protruding electrodes from the resin layer; and

a separating step of cutting the substrate together with the resin layer so that the semiconductor elements are separated from each other,

wherein the resin sealing step disposes a film between the protruding electrodes and the mold, which thus contacts the sealing resin through the film, wherein:

a pair of stress relaxing grooves is formed, prior to the resin sealing step, so as to sandwich a position in which the substrate is to be cut; and

the substrate is cut in a position interposed between the pair of stress relaxing grooves in the separating step.

Claims 29-31 (Canceled)

Claim 32 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein positioning grooves are formed on a back surface of the resin layer of the substrate after the resin sealing step is executed and before the separating step is executed.

Claim 33 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 32, wherein the positioning grooves are formed by subjecting the back surface to half scribing.

U.S. Patent Application Serial No. **09/635,124**

Claim 34 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein:

the film used in the resin sealing step has projection or recess portions located in positions in which the film is not interfered with the projecting electrodes; and

recess or projection portions formed on the resin layer by the projection or recess portions are used for positioning after the resin sealing step is completed.

Claim 35 (Previously Amended) The method for fabricating the semiconductor device as claimed in claim 1, wherein the sealing resin is processed in positions in which positioning protruding electrodes are formed in order to discriminate the protruding electrodes and the positioning protruding electrodes from each other.

Claims 36-87 (Canceled)

Claim 88 (Previously Amended) A method for fabricating the semiconductor as claimed in claim 4, wherein the resin sealing step further comprises a film disposing step of providing a non-adhesive process film between contact surfaces of the upper mold and the first lower mold half body and the second lower mold half body.

Claim 89 (Canceled)

Claim 90 (Currently Amended) A method for fabricating a semiconductor device comprising:

a mold preparing step of preparing a mold including a first mold, and a second mold which is located so as to face the first mold, the second mold including a first half body having a shape corresponding to a shape of a substrate, and a second half body which is provided so as to surround the first half body and can be elevated with respect to the first half body, the first and second half bodies cooperating with each other so that a cavity to be filled with resin is defined;

a resin sealing step of placing the substrate on which a plurality of semiconductor elements equipped with protruding electrodes are formed in the mold and supplying resin to positions in which the protruding electrodes are provided so as to form a resin layer which seals the protruding electrodes and the substrate;

a protruding electrode exposing step of exposing at least end portions of the protruding electrodes from the resin layer; and

a separating step of cutting the substrate together with the resin layer so that the semiconductor elements are separated into each other,

wherein the resin sealing step disposes a film between the protruding electrodes and the mold, which thus contacts the sealing resin through the film and the film used in the resin sealing step is formed of an elastically deformable substance, and the ends of the protruding electrodes are caused to fall in the film when the resin layer is formed by using the mold; and

the film is detached from the resin layer in the protruding electrode exposing step so that the ends of the protruding electrodes can be exposed from the resin layer.

Claim 91 (New) The method for fabricating the semiconductor device as claimed in claim 1, wherein the sealing resin used in the resin sealing step has an amount which causes the resin layer to have a height approximately equal to that of the protruding electrodes.

Claim 92 (New) The method for fabricating the semiconductor device as claimed in claim 1, wherein the resin sealing step uses a sheet-shaped resin as the sealing resin.

Claim 93 (New) The method for fabricating the semiconductor device as claimed in claim 1, wherein the sealing resin used in the resin sealing step comprises a plurality of sealing resins having different characteristics.

Claim 94 (New) The method for fabricating the semiconductor device as claimed in claim 1, wherein a second resin layer is formed so as to cover a back surface of the substrate after or at the same time as the first, resin layer is formed, in the resin sealing step, on the surface of the substrate on which the protruding electrodes are arranged.